Notes.

ARCHÆOLOGISTS will fully appreciate the announcement that one of the first official acts of the new High Commissioner of Palestine has been the establishment of a Department of Antiquities. An International Board will advise the director on technical matters. Provision is made for an inspector, for a museum, and for the custody of the historical monuments. The museum starts with more than 100 cases of antiquities collected by the Palestine Exploration Fund and other bodies before the war. On August 9 the new British School of Archæology was formally opened at Jerusalem by Sir Herbert Samuel.

AT the council meeting of the National Association of Industrial Chemists, held at Sheffield on August 7, the hon. secretary reported that a number of firms had given a definite undertaking to consult the officials of the association in all matters relating to chemists, their appointment, salaries, and conditions of employment. On the whole, the salaries paid to members of the association were fairly satisfactory; in this connection a report had been issued giving a schedule of minimum salaries, and this would be circulated shortly. The hon. secretary took a gloomy view of the future before industrial chemists. He stated that the number of unemployed was increasing rapidly, and there was every indication of a coming great slump in the engineering and allied industries in which their members were employed. It was more than ever imperative for industrial chemists to unite to preserve their interests. Mr. A. B. Searle (Sheffield) was unanimously elected president for the coming year, and Mr. J. W. Merchant appointed secretary. The proposal to appoint an organising secretary for propaganda work was also carried.

A MEMORIAL has been presented to the German National Assembly urging the formation of an Imperial Chemicotechnical Test Laboratory, which it is recommended should be formed from the Military Test Bureau which existed during the war. According to a report in the *Zeits. des Vereines deutscher Ingenieure* for May 29, it is suggested that the functions of the new laboratory should be, *inter alia*, the execution of scientific and technical investigations relative to raw materials, and particularly (1) the production of materials of importance to the public, *e.g.* spirit from wood and acetylene instead of from potatoes, and of fatty acids from the products of coal- or lignite-tar or paraffin, and the utilisation and improvement not only of cellulose as a substitute for cotton, but also of ammonium nitrate obtained synthetically in large quantities as a fertiliser; and (2) the determination of substitutes for chemical and metallurgical products not available in the country or of which there is a shortage, *i.e.* substitutes for paraffin, camphor, and glycerine, for substances used in the preservation of leather and metals, also substitutes for lubricants, rubber, gutta-percha, etc. In addition, the proposed new institute would carry out researches of general interest, *e.g.* on rust-prevention and the corrosion of metals, on the determination of stresses in internal-combustion engines, on the effect of winter cold and upper-air temperatures on implements and raw materials, and on the testing and improvement of aeroplane and airship fabrics. It is also suggested that scientific and technical investigations should be carried out dealing with the prevention of accidents and the protection of workers in a number of important industries.

THE autumn meeting of the Institute of Metals will be held at Barrow-in-Furness on September 15–16, under the presidency of Sir George Goodwin.

WE have received the quarterly report of the Research Defence Society containing an account of the annual general meeting. The Jenner Society has become affiliated to the society, and its hon. secretary, Dr. Drury, has joined the committee. At the close of the meeting Col. McCarrison gave an address on "Vitamines," an abstract of which is published in the report.

Medical Science: Abstracts and Reviews for August (vol. ii., No. 5) contains a review of recent work and articles upon "lethargic encephalitis" (see NATURE, January 1, p. 452), a disease which appeared in this country at the commencement of 1918. Cases have been reported in almost every European country and in Africa, India, the United States, and Canada. Netter points out that descriptions of a similar disease are given by Hippocrates, Aretæus, and Cælius Aurelianus, and the works of Celsus contain a chapter on "lethargic fever." Sydenham in the seventeenth century also gave a description of the same kind of disease under the name of "comatose fever." It appears reasonable to suppose, therefore, that this disease is not new, but has been in abeyance for seventy years or more. No causative organism has yet been discovered.

ON the occasion of the opening of the third laboratory of the Liverpool School of Tropical Medicine on July 24 (see NATURE, July 29, p. 696) the Liverpool University Press issued a volume (103 pp., 37 plates) giving an account of the inception of the School and its history from that time up to the present. In addition to the records of the important contributions of the School to the advance of our knowledge of tropical diseases, the volume records the benefactions which have enabled the School to develop and to perform its functions so successfully. Among recent developments may be mentioned the establishment of research laboratories at Manáos and at Sierra Leone, where continuous investigations into the diseases of these localities can be carried on. We join in the confident hope expressed that the city of Liverpool and those "whom destiny binds in diverse ways to tropical lands" will continue to support the School.

THE Research Defence Society has issued a paper by Major-Gen. Sir David Bruce on the prevention of tetanus during the Great War by the use of antitetanic serum. Sir David Bruce states in his introduction that the object of this paper is to controvert the assertions of the supporters of anti-vivisection in regard to tetanus, and to prove that antitetanic serum is of the greatest use in preventing the onset of the disease, and if not successful in this, in mitigating the severity of the symptoms and lessening the death-rate. Statistics of the incidence of tetanus among the wounded sent home, about 1,242,000, are given; there were among them 1458 cases of tetanus, a ratio of about 1 per 1000. In September, 1914, 6000 wounded men were landed in England, and 54 men wounded in that month were attacked by tetanus, a ratio of 9 per 1000. In November, 1914, there was a sudden drop to a ratio of 2·3 per 1000, and the ratio never afterwards exceeded about 2·7, and was frequently less. This sudden drop coincides with the systematic inoculation of all the wounded with antitetanic serum. The case-mortality per cent. of those who developed tetanus was 53·5 among those unprotected with antitetanic serum, and 23·0 among those who received a preventive injection of the serum. The use of antitetanic serum also markedly lengthened the incubation period of the disease, and the longer the incubation period, the milder does the disease tend to be. With a long incubation period the disease frequently assumes a localised form in the neighbourhood of the wound, and while in 1914 the percentage of cases of the acute and generalised form was 98·9 and of the local form 1·1, in 1918 the respective figures were 83·5 and 16·5. Sir David Bruce concludes, therefore, that by the preventive use of antitetanic serum (1) the incidence of the disease is lowered ten to twelve times; (2) the incubation period is lengthened four or five times; (3) the disease becomes milder, many of the cases showing only local manifestations; and (4) the death-rate is lowered fourfold.

FOUR specimens of Gephyrea were taken from the stomachs of fish at two widely separated stations by the Canadian Arctic Expedition, 1913–18. These are referred by Mr. R. V. Chamberlin (Report of the Expedition, vol. ix., Part D, 1920) to the widespread northern *Priapulus humanus*. A short account is given of other Canadian Gephyrea, which represent six species—the Priapulus already mentioned and five Sipunculids, one of which is a new species of Phascolosoma. The author appends a useful, but not quite complete, bibliography of the Gephyrea containing the titles of about 430 works.

THE remarkable habits of the sage grouse form the subject of a brief but valuable essay by Mr. Bruce Horsfall in *Zoologica* (vol. ii., No. 10), the organ of the New York Zoological Society. One of the most striking features of the displays described is the use of the wings in thrusting forward the inflated air-pouch, which plays a prominent part in the performance. The author contends that these displays are not "courtship" antics, because no notice was taken of one or two females which "meandered through the throng" while the performance was in full swing. But since the breeding season seems only just to have begun, one feels inclined to doubt the validity of this interpretation. A number of unusually good text-figures and a coloured plate add greatly to the value of this most welcome addition to our knowledge of the ecology of the sage grouse.

THE nesting of the bee-eater in Scotland is an event in the annals of British ornithology which is indeed worthy of record, and we are greatly indebted to Mr. J. Kirke Nash for his carefully kept notes thereon which he publishes in *British Birds* for August. A pair of these birds were first seen on June 3 perched on a wire fence surmounting a sand-bank of the River Esk, near Musselburgh. When discovered they were engaged in catching flies, after the fashion of the flycatcher. On June 7 they were found entering and leaving a hole in the bank, and as the male was seen feeding his mate it was clear that they were nesting. On June 13, however, the female fell a victim to the stupidity of a gardener, who captured it, placed it in a greenhouse, and "fed" it on breadcrumbs. Needless to say, it died within two days, after laying an egg. A few days later the unfortunate survivor was caught and killed by a cat.

DR. B. H. RANSOM contributes to the Proceedings of the United States National Museum (vol. lvii., pp. 527–73, 33 figs., 1920) a synopsis of the Trematode family Heterophyidæ, with descriptions of a new genus and five new species. This family is composed of a number of genera of small Trematodes, usually not more than 2 mm. long, parasitic in the intestine of mammals and birds, usually fish-eaters. Two of these flukes, *Heterophyes heterophyes* and *Metagonimus Yokogawai,* occur in the small intestine of man—the former in Egypt, China, and Japan, and the latter in Formosa, Japan, and Korea. These occur also in the dog and cat, and five other flukes of this family have been recorded from these animals. The author gives a key to the characters of the nine genera which he recognises as valid, and also supplies the necessary keys to the species.

THE first annual report of the Industrial Fatigue Research Board (H.M. Stationery Office) contains an interesting record of work completed or in progress. Of the four reports already issued that of Dr. Vernon dealing with the influence of hours of work and ventilation on output in the tinplate industry is the most extensive, while the report by Mr. Major Greenwood and Miss Hilda Woods upon the incidence of industrial accidents (the statistical theory of this investigation has been further developed in a paper by Messrs. Greenwood and Yule published in the March, 1920, issue of the Journal of the Royal Statistical Society) suggested some important problems which the Board proposes to study further. Mrs. Osborne's paper on the output of female munition workers and Dr. C. S. Myers's analysis of the results obtained in a factory after the introduction of motion study are also of interest. Amongst investigations not yet completed, that on the relation between length of shift and fatigue in the iron and steel industry, entrusted to Dr. H. M. Vernon, is almost ready for publication, and progress has been made with inquiries into special conditions affecting the cotton, boot and shoe, and silk industries. The Board has a large number of tasks in hand, and it is yet too early to decide which are likely to be most remunerative. It is, however, clear that careful thought has been devoted to the organisation of research, and we have no doubt that the outcome will be of the greatest benefit to both employers and employed.

Copies of new editions of several pamphlets in the Economic Series published by the Natural History Museum have come to hand. No. 1 on the house-fly (*Musca domestica*) by Major Austen is in its third edition, and has been enlarged and almost entirely rewritten. It deals with the house-fly under normal conditions in the British Isles; those who desire further information, including Army requirements, should consult the larger pamphlet, No. 1A, in the same series. The illustrations are exceedingly clear, and several of these, along with the letterpress, will help to distinguish the commoner house-frequenting flies from the true house-fly, which they closely resemble. *Musca autumnalis* is a case in point; it frequently enters houses, etc., and hibernates therein during the winter, giving rise to the popular belief that the winter habits of *M. domestica* are well known. The latter feature, however, is one concerning which we need much more extensive observation than has been accorded to it in the past. The breeding habits of the house-fly are also dealt with, and simple remedial and preventive measures against this pest are enumerated. No. 3, by Mr. J. Waterston, deals with fleas and their relation to man and domestic animals. It is noteworthy that eleven species have up to the present proved capable of transmitting plague. Five of them are common in Britain, while the plague-flea *par excellence* (*Xenopsylla cheopis*) is occasionally introduced. No. 4, on mosquitoes, is written by a recognised student of the family, Mr. F. W. Edwards. The relation of these insects to disease and the control measures in vogue are clearly explained. No. 6, by Mr. H. Hirst, deals with scorpions, mites, ticks, spiders, and centipedes in so far as they may be injurious to man. Nos. 3 and 6 are reprints, without alterations, of their predecessors, and No. 4 differs from its original edition only in a few small additions to the letterpress.

An interesting account of the development of the mica industry in Eastern Transvaal during the last ten years is given by Mr. A. L. Hall in Memoir 13 of the Geological Survey of the Union of South Africa (1920). The "books" of mica that are of economic value occur as constituents of coarse-grained pegmatites which cut the older granite of the Pietersburg district. The memoir gives a review of the uses of mica and of the qualities and occasional defects that must be considered from a commercial point of view.

Mr. Seitarô Tsuboi has published a complete study, structural and petrographical, of the island volcano of Oshima, the largest of the "Seven Islands" group south-west of the Bay of Tokyo (Journ. Coll. of Sci., Imp. Univ. Tokyo, vol. xliii., May 10, 1920). Incidentally, he introduces a method for the determination as nearly as possible of the maximum and minimum refractive indices of minerals represented by minute crystal grains, by using a large number of grains immersed in various liquids above a Nicol. The great crater-ring formed by ancient ejecta is now dominated by the recent central cone of Miharayama, which is still active. The author is not afraid of technical terms, and concisely describes the volcano as consisting of "double homates—a somma and a central one," and as "built up of numerous layers alternately accumulated of rheumatitica and clasmatica of basaltic nature."

Mr. H. Valentine Davis sends us a copy of his "Little Book about Snowdon," published by him at Wistaston, Crewe. This is illustrated with sketches, sketch-maps, and sections drawn to the same vertical and horizontal scale, which should do much to interest the visitor to Llanberis in the many features of scientific interest that are so well displayed on Snowdon. It is a forerunner of a larger guide-book, and hence only the Llanberis path is treated as a route to Y Wyddfa. Without being didactic, Mr. Davis introduces the right touches at the right points, and gives just enough to make the reader think. The section showing the descent of the erratic maen d'ur arddu from the back of the cwm contains a lot of glacial lore, and might well be enlarged as a typical diagram of cirque-formation for the class-room. This alone is worth the sevenpence charged (8*d.* post free) for this unassuming but effective little pamphlet. Will Mr. Davis consider in the quiet of "Noddfa" whether he or his printers are responsible for "Grib Goch" (regularly repeated), "ffynon," and "carreg"?

The latest issue of the Journal of the Royal Statistical Society (vol. lxxxiii., part iii.) contains an interesting paper by Mr. M. S. Birkett, statistical officer of the National Federation of Iron and Steel Manufacturers, on "The Iron and Steel Trades during the War," which brings out very clearly the efforts made by this industry to produce the enormous supply of munitions of war that were needed for the great struggle. The author makes it clear that it was the character rather than the quantity of material produced that had to be modified. Thus in 1913 the total production of pig-iron was about 10,250,000 tons, which had fallen in 1914 to just under 9,000,000 tons, and remained approximately stationary at that figure throughout the war. The classes of pig-iron used essentially for steel-making, namely, hæmatite and basic, had, however, risen from 58 per cent. to 72 per cent. of the total, by far the biggest increase being in the latter class, the output of which in 1918 was 50 per cent. above that of 1914. There was a corresponding increase in the output of steel, which reached 9,500,000 tons in 1918, an increase of 1,700,000 tons over 1914, the bulk of the increase again being in basic steel, of which there was above 50 per cent. more made in 1918 than in 1914. It is interesting to note that there were employed on the blast furnaces 39,200 men in July, 1914, as against 54,900 in July, 1919, so that the efficiency of the men employed had gone down very considerably. The total numbers employed in the industry at those two dates were 304,000 and 376,300 respectively, or, deducting those employed on blast furnaces, ironfounding, and tinplate manufacture, which are given separately, 178,400 and 235,700 respectively, an increase of nearly one-third; by far the larger number of these were undoubtedly engaged in steel manufacture. The paper deals also with the production of iron and steel in France and in the United States, and includes an interesting table of the production and export of iron and steel in the chief iron-producing countries of the world, which shows strikingly the amount of loss that the war has inflicted upon the German iron and steel industries.

Hong-Kong Royal Observatory has recently issued its report for the year 1919, under the directorship of Mr. T. F. Claxton. The report deals mainly with meteorology, but it includes in a general way the magnetic elements and time services, with the necessary astronomical observations for the latter. In the description of the various meteorological instruments in use a doubt is thrown on the relation between the temperatures in the thermograph shelter and the hourly readings by the rotation thermometers, and it is stated that the difference is not constant throughout the day. Details of the comparison would be useful and interesting. In addition to the automatic records, eye observations of the same elements are said to be made each hour; perhaps less frequent eye observations would be sufficient, and time thus saved might with advantage be devoted to a discussion of clouds, the character and direction of which are said to be observed every three hours. Attention is directed to the large departures from normal from month to month in atmospheric pressure, temperature, and wind. A typhoon on August 22 occasioned a squall at the rate of 84 m.p.h., although the centre of the disturbance passed about 150 miles to the south-west of Hong-Kong. The greatest rainfall in twenty-four hours was 4·80 in. on July 5, and the greatest in one hour was 1·35 in. between 5 and 6 a.m. on October 1. The total rainfall for the year at the observatory was 76·14 in., of which 49·92 in. fell in June, July, and August; and in these months, in the heaviest rains occasioning floods, 38·79 in. fell in 186 hours. Seventy-one per cent. of the daily weather forecasts are said to have been completely successful. Meteorological logs were received from eighty-one ships operating in the Far East, representing 2587 days' observations. It would be a valuable asset for aeronautics if observers could be encouraged to give especial attention to cloud observations; marine and aeronautic meteorology are becoming closely interlocked.

The June issue of *Terrestrial Magnetism and Atmospheric Electricity* contains Capt. J. P. Ault's preliminary results of the magnetic observations taken on the United States Magnetic Survey ship *Carnegie* during her voyage from Buenos Aires to St. Helena in February and March last. According to the new measurements, the deviation of the compass and the dip as given on the most recent British Admiralty Chart No. 3775 are in many cases 1° out in the deviation and 2° or 3° out in the dip. The most serious differences are to be found in the region between 45° south latitude 329° east longitude, and 36° south 354° east, where the British chart gives the deviation to the west too small by about 1°; while over the region 33° south 2° east to 16° south 8° east the dip is given between 2° and 3° too small. The horizontal intensity given on the chart is everywhere too large by about one unit in the second decimal place of the value in C.G.S. units.

The Journal of the Torquay Natural History Society, vol. ii., No. 6, has just reached us. Among other interesting papers is one on the scientific correspondence of Charles Kingsley and William Pengelly. An account of the life of Charles Kingsley is given, together with extracts from letters written by him between 1867 and 1870 to William Pengelly. Points of natural history, mostly of a geological nature, were raised in these letters. Another paper of interest is "Mendelism and Selection." The results of recent experiments by Prof. Castle are discussed in terms of germ-plasm with the view of reconciling Mendelism with selection. In yet another paper some account is given by Mr. H. G. Lowe of the origin of the needle; its history is traced back through three needle-like implements which have been found while excavating in Kent's Cavern. The view taken is that the discovery of the needle marked the first step in man's struggle from a purely animal state of existence.

Messrs. Gauthier-Villars, of Paris, are publishing a series of works of great men of science entitled "Les Maîtres de la Pensée Scientifique," with the object of making the original works known to scientific students. We have received four volumes containing writings of Lavoisier, Huygens, and Spallanzani, each including a short biographical note on its author. "Mémoires sur la Respiration et la Transpiration des Animaux," by Lavoisier, is a collection of four papers read to the Académie des Sciences between 1777 and 1790. The text is taken from the Mémoires of the society for the appropriate years. "Traité de la Lumière," by Huygens, is reprinted from the original work published in 1690, with some necessary alterations in spelling and punctuation. The two volumes entitled "Observations et Expériences faites sur les Animalcules des Infusions," by Spallanzani, are copies of a translation of the original work by Jean Senebier published at Geneva in 1786. The diagrams included in the translation are not reproduced. When the series is completed it will serve as a ready means of access to the works of men prominent in the history of science, and it should be particularly valuable to the student by giving him an opportunity of learning at first hand the methods and arguments by which scientific knowledge has been advanced.

Messrs. Sifton, Praed, and Co., Ltd., promise for the autumn publishing season an illustrated volume by Miss Gardner King on the present condition of the inhabitants of the Fiji Islands, based upon the author's experiences among them shortly before the war. Miss King lived much among the natives in their own homes, and should therefore have an interesting story to tell.